

PROJECTORS

INTRODUCTION

Whether you want to give a PowerPoint presentation to a room full of people or watch movies in a cinema-like setting, a projector is the only way to go. Even the cheapest projector here can project a huge 58in image at seven feet.

In this month's Labs we've got 12 projectors: eight for the office and four home cinema devices. The office projectors tend to be smaller and lighter, and are designed for use with a PC for presentations. The home cinema projectors are geared up to deliver HD content in widescreen aspect ratios.

If you need a projector that can cope with both jobs, you won't be disappointed. Here you'll find office projectors with HDCP-compliant inputs for HD movies, and home cinema projectors with PC inputs that can control a slideshow. The best thing is that all the projectors here cost less than £1,000, and some are half that. Whatever you need, we'll help you get the biggest and best display for your budget.

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For movie buffs and executives out to impress, there's no substitute for a projector. We buy a bucket of popcorn and take our seats to test 12 devices for the home or office

THE LIGHT BRIGADE

Choosing a... Projector

There are two categories of projector, office and home cinema, but the line between the two is blurring. Many office models are perfect for watching movies, and home cinema models are often capable of controlling presentations and taking a PC input. This can make choosing the right projector difficult, so before you start looking, you need to decide whether you want a projector for one specific task, or a flexible projector that you can use both at home and at work. If flexibility is what you're after, you need to consider which job your projector will do most.

DLP AND LCD

There are two types of projector technology: liquid crystal display (LCD) and digital light processing (DLP). LCD projectors work by splitting the light source into red, green and blue components. Each frequency of light passes through a small LCD screen. The images from all three displays are combined and pass through a lens to create a colour image.

DLP projectors use a single digital micromirror device (DMD) chip, which is made up of thousands of tiny mirrors, one for each pixel on the screen. The chip controls the angle of each mirror to turn it on, in which case it reflects light through the lens and the pixel is

white, or off, in which case light is reflected away from the lens and the pixel is black. By turning the mirrors on and off very quickly, the DMD can create shades of grey. To produce a colour image, a spinning colour filter called the colour wheel is placed between the light source and the DMD. In older models this has three segments, allowing red, green and blue light to fall on the DMD. By synchronising the DMD's mirror movements with the colour wheel, three different images are projected for each frame. Our eyes then combine the red, green and blue images into a single image with the correct colours (see www.dlp.com for more information).

The main problem with this system is that fast-moving objects in movies, for example, can put the three frames slightly out of sync, creating a burst of rainbow colour known as the rainbow effect. Some manufacturers have reduced this by adding more colour segments to the colour wheel. Our reviews will tell you where this is a problem.

DLP's main advantage is that the small chip enables manufacturers to produce tiny portable projectors, which are perfect for business. As LCD projectors have to accommodate three small screens inside, there's a physical limit to how small they can be.



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DLP's other advantage is that pixels can be turned on or off completely, so projectors that use this technology have high contrast ratios, which means they produce dark blacks and bright whites. LCD technology produces lower contrast ratios, so blacks can look grey and whites dim. However, home cinema projectors use dynamic irises that constantly adjust the amount of light projected on the screen. This creates high dynamic contrasts for dark blacks and bright whites. LCD projectors generally produce better colours than DLP and have a sharper picture. With no rainbow effect, they generally produce smoother and better-looking video.

BRIGHTNESS

A projector's ANSI lumens rating tells you how bright it is. The higher the ANSI lumens number, the brighter the projector will be. For business use, the projected image must be bright enough to show an image clearly under standard office lighting. As a rough guide, 1,200 lumens is good enough for a dimly lit room, 2,000 lumens is fine for standard office lighting and 3,000 lumens or more is required for use under very bright light. Home cinema models will almost certainly be used in a darkened room and so are not as bright. However, all four home cinema projectors in this test have a rating higher than 1,000, and one is as high as 1,600 ANSI lumens.

MOVIES AND PRESENTATIONS

An office projector will spend most of its life displaying computer applications, such as PowerPoint. For this purpose the ideal aspect ratio is 4:3, which is the ratio of all the office projectors here. Look for a projector with a USB port, as this enables you to control your presentation with the remote control.

Home cinema projectors have widescreen aspect ratios (generally 16:9), so they're close to the ratios used by films and television. All the projectors in this group are HD ready, so they're

HD-Compliant for Blu-ray and HD-DVD players, and have either HDMI or DVI inputs, as well as a component input.

If you're looking for a projector to use both at work and at home, our reviews and table tell you which office projectors can play HD movies and are HDCP-compatible, and which home projectors can be hooked up to a PC and control presentations. Our table also tells you which other inputs the projectors have, so you can see whether you can connect your DVD player, games console or other equipment.

How we test Projectors

We assess the image quality of each projector both in home cinema and office environments. For office tasks, we put each model through our standard suite of monitor tests, which are designed to show up any problems with colour accuracy, contrast and brightness. Displaying a rapidly bouncing white square on a black background tests the ability of a DLP projector to avoid the rainbow effect, for example. We also display text at a range of font sizes to test for legibility. We run our tests through both analogue and digital connections, where available.

Where possible we use a Pioneer DVD player producing progressive-scan video and connected through a component input to assess a projector's video quality. We also test each device's HD ability using 720p movie clips. Many movies are still in a standard-definition interlaced format, so we test video signal processing with the HQV benchmark suite. This reveals any problems with anti-aliasing – which gives straight lines, such as the edge of a table, a jagged appearance – and image noise, which shows as speckling in areas of uniform colour such as the sea or sky.

ACER
PH730

★★★★

£632 inc VAT

From www.technoworld.com

The PH730 won four stars when we reviewed it in *Shopper* 224. Since then the price has dropped by £646, so we wanted to see how it compares with newer models.

It's the least attractive projector here, and looks as if it belongs more in an office than a home. In fact, it's well equipped for office use. It has a DVI input, VGA output and a USB port, so you can control a slideshow from a computer. It's also the only home projector with speakers, although the 3W of power is fine only for presentations, not movies.

There's plenty for home users, too. It's HD ready and has HDMI and component inputs. At 28dB(A), it's quiet enough not to be distracting. At 1,200 ANSI lumens its picture can be seen clearly under normal lighting. Configuring the picture is quite easy, as there are zoom and focus controls, but there's sadly no lens shift.

With a native resolution of 1,280x768, it can display 720p footage natively with thin bars across the top and bottom. It also accepts a 1080i input, downscaling the image to fit. This projector has the lowest contrast ratio in this category of 2,500:1. This didn't hamper performance, though, and the PH730 displayed a high level of detail in all our test clips.

Rainbow effect can be a problem with DLP projectors, but not for the PH730's seven-segment colour wheel. The biggest problem was image noise.

Acer's PH730 is a good all-round projector that you can use at home and at work. Since we last reviewed it, though, it doesn't compare so well with the competition.

SUMMARY

- ✓ Good value
- ✓ Barely any rainbow effect
- ✗ Image noise; reds look brown

HOME CINEMA DLP PROJECTOR
1,280x768 native resolution, 2,500:1
contrast ratio, 1,200 ANSI lumens
PART CODE EYJ3001.001
DETAILS www.acer.co.uk

EPSON
EMP-TW680

★★★★★

£664 inc VAT

From www.misco.co.uk

Epson's EMP-TW680 looks stylish, with off-white curves and a silver lens. Its lens shift controls enable you to place the projector off-centre from your screen and align the picture. There's lots of room for adjustment, with a vertical shift of 96 per cent and a horizontal shift of 47 per cent.

As with the other LCD home cinema projector in this group – BenQ's W500 – the EMP-TW680 has a dynamic iris. This constantly adjusts the light the projector emits, giving a contrast ratio of 10,000:1, which is by far the highest in this group. This was also the brightest home cinema projector at 1,600 ANSI lumens, so you can watch films in well-lit rooms.

Our HD clips were flawless once we'd adjusted the picture settings. The Windows desktop was the crispest here over analogue and digital connections. Images were sharp and detailed, whether from stills, HD or standard-definition video. Colours were vibrant and skin tones realistic, with dark blacks and bright whites. Standard-definition images showed more noise than those from BenQ's W500 in areas of solid colour, though.

While the BenQ W500 can downscale 1080p-resolution footage, the EMP-TW680 can downscale only 1080i video to its native resolution of 1,280x720. Connecting your home cinema kit is easy, as there are HDMI and component inputs, a VGA input for a PC, and a D4 input (used only in Japan) with a SCART converter.

The EMP-TW680 is a great projector with amazing image quality and a low price, but BenQ's W500 has slightly better image quality and doesn't cost much more.

SUMMARY

- ✓ Great image quality; bright
- ✓ Excellent value
- ✗ Excessive image noise

HOME CINEMA LCD PROJECTOR
1,280x720 native resolution, 10,000:1
contrast ratio, 1,600 ANSI lumens
PART CODE EMP-TW680
DETAILS www.epson.co.uk

BENQ
W500

★★★★★

£688 inc VAT

From www.ebuyer.com

BenQ's W500 looks good, with white curves and silver sides. Hot air is expelled from the right side and the front, which may affect where you can place it. You needn't place it straight-on to your screen, though, as a 55 per cent horizontal and vertical lens shift makes it easy to align. BenQ says this projector has a 28dB(A) noise level, but we found it the quietest of the home cinema projectors.

Like Epson's EMP-TW680, the W500 has a dynamic iris, although its contrast ratio is half that of Epson's projector at 5,000:1, and less than the 6,000:1 of Optoma's HD73. It has a good array of connections, with two sets of component inputs, as well as HDMI. The Windows desktop looked crisp when connected to a PC digitally using HDMI to DVI, but the focus was soft on the right-hand side when using an analogue connection.

The image quality of standard-definition clips blew us away. Images were sharp, with little noise and excellent anti-aliasing to smooth jagged edges. It handled our HD movie clips with ease, producing rich colours and a good level of detail. It struggled with detail in very dark scenes, though.

The W500 displays 720p at its native resolution of 1,280x720, and downscals 1080i and 1080p footage. Running costs for the W500 are exceptionally low, as the lamp costs 5p an hour in economy mode.

The W500 has a good range of features and great image quality at a reasonable price. Its superior handling of standard-definition images gives it the edge over Epson's EMP-TW680.

SUMMARY

- ✓ Excellent image quality; quiet
- ✓ Superb value
- ✗ Loses detail in dark scenes

HOME CINEMA LCD PROJECTOR
1,280x720 native resolution, 5,000:1
contrast ratio, 1,100 ANSI lumens
PART CODE 9J2K77.B5E
DETAILS www.benq.co.uk

OPTOMA
HD73

★★★★★

£990 inc VAT

From www.digitaldirect.co.uk

Optoma's HD73 is easy on the eye, with a smooth white case and brushed silver sides. Hot air is expelled from a vent on the right-hand side, so it's not ideal for positioning in areas of limited ventilation, such as a bookshelf. We'd recommend keeping space around this projector, as it became hotter than the other home cinema models. It is quieter in operation than the office projectors, but slightly noisier than the other home projectors.

The HD73 uses the same-sized DLP as Acer's PH730, and outputs the same 1,280x768 native resolution. When connected to a PC it can match a resolution of 1,024x768 without compression, although a thin border is present when watching widescreen movies. This isn't very noticeable.

In the past, DLP projectors suffered from over-saturated colours and brownish reds, but the HD73's colours were rich and vibrant. Its seven-segment colour wheel meant there was very little rainbow effect.

The HD73 picked out detail even in the darkest parts of our HD clips. Like BenQ's W500, it excelled at handling interlaced standard-definition material too. The HD73 displayed a perfectly crisp Windows desktop over both analogue and digital connections.

We had to use an adaptor to connect our PC with VGA as the HD73 has only a DVI connector. For home cinema equipment it provides S-video, composite and HDMI inputs.

Optoma has done an excellent job with the HD73. Its superb picture quality won't disappoint, but it's expensive. BenQ's W500 is just as good and is £298 cheaper.

SUMMARY

- ✓ Excellent picture quality
- ✓ Hardly any rainbow effect
- ✗ Expensive

HOME CINEMA DLP PROJECTOR
1,280x768 native resolution, 6,000:1
contrast ratio, 1,100 ANSI lumens
PART CODE HD73
DETAILS www.optoma.co.uk

OPTOMA EP727

★★★★★

£458 inc VAT
From www.dabs.com



Optoma's EP727 is the joint-smallest projector, along with Panasonic's PT-LB51NTEA. At 2kg it weighs slightly more, but it's still light enough to be carried easily.

The EP727 is bright at 2,200 ANSI lumens, and produces a clear picture under office lighting. Its 2,200:1 contrast ratio is the highest in this category, while a short throw distance enables it to produce a large 104in diagonal picture at just 2.12m (7ft) from the screen. It is also exceptionally quiet for a DLP projector and on a par with the LCD models.

The EP727 vents a lot of hot air through the front, but with some heat expelled through the side vent you'll still need to place it somewhere with good ventilation. It has just one VGA input and output, but its HDCP-compatible DVI input enables you to watch HD movies.

It displays 720p and 1080i HD material, although it scales both to match its native resolution of 1,024x768. It does this well, reproducing detail even in dark areas. There is a slight rainbow effect. Colours are natural. Our progressive scan DVD and standard-definition video looked excellent, with good anti-aliasing, sharp detail and very little noise.

This projector comes into its own when connected to a PC. The Windows desktop is pin sharp over both analogue and digital connections. Our dark screen was properly black, while whites were bright and clean. Text down to the smallest sizes looked crisp and clear on the big screen.

This is the cheapest projector in the office category, but it has the best picture. It's an excellent all-rounder.

SUMMARY

- ✓ Small; light; excellent image
- ✓ HDCP-compatible; quiet
- ✗ Slight rainbow effect

OFFICE DLP PROJECTOR 1,024x768
native resolution, 2,200:1 contrast
ratio, 2,200 ANSI lumens
PART CODE EP727
DETAILS www.optoma.co.uk

SANYO PLC-XW55

★★★

£465 inc VAT
From www.lambda-tek.com/componentshop



Sanyo's PLC-XW55 has a cream-coloured case with a dark grey underside. We felt this looked unappealing and plasticky, which is a shame as the projector feels well built. It is the second-cheapest projector in this group.

Sanyo quotes a noise level of 30dB(A) for this projector, but we found it to be one of the quietest in this category. Hot air is expelled through vents in the back and left-hand side. Along with Panasonic's PT-LB51NTEA, the PLC-XW55 has the lowest contrast ratio in the group at 400:1. Its 2,000 ANSI lumens is bright enough for use under typical office lighting. At 8p an hour, this is one of the most expensive projectors to run.

The single VGA input can be used for component and S-video connections with a suitable adaptor. The PLC-XW55 supports 720p and 1080i video, but doesn't have HDCP compatibility so you can't watch Blu-ray or HD DVD movies. This projector is much better at displaying moving images than Panasonic's. Colours were good, and details sharp. It does particularly well at anti-aliasing, with no jagged edges visible. Image noise is a problem, though, with a lot of speckling in areas of solid colour.

The Windows desktop was not as crisply focused as we'd have liked, and Panasonic's projector did a better job. Our dark screen test was grey rather than black, and small text on our test PowerPoint slide was hard to read.

The PLC-XW55 is reasonably priced and doesn't do a bad job at displaying video. However, its ability to perform office tasks was below par. Optoma's EP727 is cheaper and has better image quality.

SUMMARY

- ✓ Good for video
- ✗ Poor focus over VGA
- ✗ Blacks appear grey

OFFICE LCD PROJECTOR 1,024x768
native resolution, 400:1 contrast ratio,
2,000 ANSI lumens
PART CODE PLC-XW55LMP
DETAILS www.sanyo.co.uk

VIEWSONIC PJ758

★★★★

£466 inc VAT
From www.morecomputers.co.uk



Viewsonic's PJ758 is matt black and boxy. At 3.5kg you wouldn't want to carry it far, but it won't break your back if you move it around the office. LCD projectors tend to have a much lower contrast ratio than DLP models, and the PJ758 is no exception, although its 500:1 contrast ratio is the joint-highest among the LCD office projectors.

The PJ758 isn't as quiet as Sanyo's projector but it was barely audible in a quiet office. Hot air is expelled through a rear vent.

As well as two VGA inputs and a VGA output, the PJ758 has S-video and component connectors. It is compatible with 720p and 1080i HD signals but has no HDCP support.

The PJ758 did quite well in our office tests. The Windows desktop was well focused, and small text appeared crisp on the big screen. However, we weren't able to get properly dark blacks, and the projector failed to pick out small details in dark areas of still images. It produced a smooth greyscale gradient, but colours were oversaturated and unrealistic.

The PJ758 wasn't so good at displaying video. We couldn't get the colours right, and footage appeared over-saturated. Scaling of standard-definition video was handled well, with sharply defined images and only a slight jagged appearance to straight edges. However, it failed to reduce noise in moving images.

The PJ758's image quality is average. Its pin-sharp focus over VGA is a plus, but poor colour reproduction and HD performance is disappointing.

SUMMARY

- ✓ Good for standard video
- ✗ Over-saturated colours
- ✗ Poor HD performance

OFFICE LCD PROJECTOR 1,024x768
native resolution, 500:1 contrast ratio,
2,200 ANSI lumens
PART CODE PJ758
DETAILS www.viewsonic.co.uk

BENQ MP622c

★★★

£508 inc VAT
From www.lambda-tek.com/componentshop



BenQ's small MP622c projector is housed in a shiny black case. It plays a chirpy little tune when switched on, and again when turned off. It was the quickest projector here to power down. Like many DLP office models, it's loud and generated a lot of heat. The fan blasts much of this out of the front vent, so you can mount it on a bookshelf or other confined space.

The MP622c's running costs are quite low at just 5p per hour. It has a minimal number of connectors at the rear: audio, composite, S-video and a single VGA output and a VGA input. Component inputs are available through the VGA connector using an adaptor, but there's no digital input. It supports both 720p and 1080i HD formats, but is not HDCP-compliant.

As it uses DLP technology, the MP622c has a fairly high contrast ratio of 2,000:1, but it's lower than that of Optoma's EP727. It also costs just over £220 more than the Optoma. The brightness of 2,200 ANSI lumens is very bright and suitable for well-lit offices.

While the MP622c produced clean, bright whites, we couldn't get the dark blacks we'd expect from DLP technology. The focus when displaying Windows was a little soft. It produced smooth transitions in our greyscale gradient test, except in the mid-grey tones, where some banding was evident. Small details in images weren't clear, but small text on our PowerPoint slide was crisp. Colours were muted and the rainbow effect was pronounced with moving images.

The MP622c's below-par image quality doesn't justify its price.

SUMMARY

- ✓ Bright
- ✗ Text can be hard to read
- ✗ Poor movie playback

OFFICE DLP PROJECTOR 1,024x768
native resolution, 2,000:1 contrast
ratio, 2,200 ANSI lumens
PART CODE 9J.06277.B9E
DETAILS www.benq.co.uk

MITSUBISHI ELECTRIC XD510U

★★★

£644 inc VAT
From www.247av.com



The XD510U is the latest addition to Mitsubishi's range of business DLP projectors. It has a rather plain off-white body, with a grey underside.

Although the XD510U has a quieter decibel rating than InFocus's IN36, it sounded louder. In particular, the fan made a loud whirring noise, which is distracting in a quiet room. It blasts out a lot of hot air from the right-hand vent, which would be uncomfortable for anyone sitting next to it. Even with the fan working hard, the projector got exceptionally hot.

The XD510U has two VGA inputs and a VGA output. It accepts component inputs through one of the VGA ports and supports 1080i and 720p HD video, but with no digital connections it is not HDCP compatible.

The XD510U produced a well-focused Windows desktop, but blues were too purple. This could be adjusted a little, but we couldn't get accurate reds and these appeared brownish. The DLP rainbow effect was pronounced and we noticed it even when viewing still images. This can be very distracting, not to mention annoying, when doing a presentation.

Colour problems made watching our progressive-scan DVD less than pleasurable, as did the lack of anti-aliasing. Watching HD material wasn't much fun, as the projector failed to display detail as well as other projectors. The projector's menu has a noise reduction setting, but this didn't seem to make any difference.

The XD510U is fairly inexpensive and has low lamp running costs at 6p per hour, but its colour accuracy and pronounced rainbow effect are disappointing. It is outperformed by cheaper office models.

SUMMARY

- ✓ Low lamp running costs
- ✗ Poor colour and anti-aliasing
- ✗ Pronounced rainbow effect

OFFICE DLP PROJECTOR 1,024x768
native resolution, 2,000:1 contrast ratio,
2,600 ANSI lumens
PART CODE XD510U
DETAILS <http://vis.mitsubishielectric.co.uk>

PANASONIC PT-LB51NTEA

★★★

£658 inc VAT
From www.zomp.net



Panasonic's PT-LB51NTEA is the only projector in this group that can connect wirelessly to a network or PC. This was fiddly to set up, as the manual's instructions were unclear, but once we'd got the projector talking to our laptop the results were impressive. The Windows desktop was crisp with good colour, and the projector had no trouble showing our display tests and video clips wirelessly. According to Panasonic, the projector can connect wirelessly to up to 16 computers at the same time.

The projector has a VGA input, and a second VGA port works as an input and an output. There's no digital connection. The PT-LB51NTEA displays 720p and 1080i HD material but isn't HDCP compliant. We found the high-pitched fan noise quite annoying. Its side vent expels a lot of hot air for an LCD projector, but it kept the chassis cool enough to touch.

Although the projector produced a crisp Windows desktop over an analogue connection, the colours were inaccurate. We had particular trouble with yellow, and couldn't resolve it satisfactorily in the projector's settings. Small text on our test PowerPoint slides looked blurry. The PT-LB51NTEA, along with Sanyo's PLC-XW55, had the lowest contrast ratio in the group at 400:1.

The PT-LB51NTEA doesn't handle interlaced video very well. Pictures lacked sharpness, suffered badly from image noise and lacked anti-aliasing, which resulted in a very pronounced jagged appearance to all diagonal lines. The PT-LB51NTEA's wireless capabilities are impressive, but it's a shame that the image quality isn't so good.

SUMMARY

- ✓ WiFi; small and light
- ✗ Poor image quality
- ✗ Loud

OFFICE LCD PROJECTOR 1,024x768
native resolution, 400:1 contrast ratio,
2,000 ANSI lumens
PART CODE PTLB51NTEA
DETAILS www.panasonic.co.uk

HITACHI CP-X205

★★★★

£706 inc VAT
From www.247av.com



Hitachi's CP-X205 is the most expensive LCD projector here. It has two VGA inputs and a VGA output, enabling it to display the projected image on a monitor. It doesn't have a DVI input. The lamp costs 11p an hour to run, which is almost twice the running cost of Optoma's EP727.

Like the other office LCD projectors, its contrast ratio of 500:1 is fairly low. The 2,200 ANSI lumens brightness is what we'd expect from an office projector and is bright enough to display an image under office lighting. The CP-X205 is the quietest office projector in this group, and stayed cooler than the other office models. Hot air is vented out through the rear rather than the side, which will make using it more comfortable in situations where it is placed on a meeting table between viewers.

Image quality is good for presentations. The CP-X205 displayed pure whites but blacks were a bit grey no matter how we adjusted the settings. Our greyscale test showed a smooth gradient, although the CP-X205 had trouble displaying similar shades at the darkest and brightest ends of the scale. Colours were rich and vivid without being over-saturated. The Windows desktop was sharp and clear, as was small text. The internal 7W speaker is loud and tinny but fine for the occasional sound or video clip.

This is not an ideal projector for video. Moving images suffered from noise, and poor anti-aliasing resulted in jagged edges to straight lines.

The CP-X205 is expensive to buy and run, and is outperformed by Optoma's EP727.

SUMMARY

- ✓ Rich colours; bright image
- ✗ Expensive
- ✗ Image noise and jagged lines

OFFICE LCD PROJECTOR 1,024x768
native resolution, 500:1 contrast ratio,
2,200 ANSI lumens
PART CODE CPX205
DETAILS www.hitachi.co.uk

INFOCUS IN36

★★★

£744 inc VAT
From www.lambda-tek.com/componentshop



The IN36 is the best-looking office projector in the group, with its sleek silver body and matt-black top and bottom. The fans push out a considerable blast of hot air from the vent on the right-hand side of the projector, which keeps the projector cooler than some other DLP models but creates a lot of noise. We could hear the fan above our background office noise, so it could be distracting in a small, quiet meeting room.

There's little difference between the IN36's Film and Video modes. The Presentation preset works brilliantly in well-lit environments, ramping up brightness and contrast. It reduces colour accuracy, however, so it's best to create your own presets. Despite our adjustments, colours were muted.

At 3,000 ANSI lumens, this is the brightest projector in the group, so it's suitable for even bright offices. Our black screen test looked slightly grey rather than truly black. While every other DLP projector we've ever reviewed has had a contrast ratio of at least 2,000:1, the IN36's is just 1,000:1, and it showed. Our high-contrast test photos weren't as detailed as those from other DLP models. Text needed to be of a medium size or higher to be legible, and the IN36 suffered badly from the rainbow effect, which was highly distracting.

There is a VGA input, but the IN36 uses an M1-D/A input to connect digitally to a PC. You will need an adaptor to connect this projector to a DVI port. The IN36 does well at presentations, but is poor for video, and it's expensive. Optoma's EP727 is cheaper and has better image quality.

SUMMARY

- ✓ Very bright image
- ✗ Pronounced rainbow effect
- ✗ Muted colours; grey blacks

OFFICE DLP PROJECTOR 1,024x768
native resolution, 1000:1 contrast
ratio, 3,000 ANSI lumens
PART CODE IN36-RE
DETAILS www.infocus.com

HOME CINEMA PROJECTORS

OFFICE PROJECTORS

HOME CINEMA PROJECTORS		BEST BUY		BEST BUY			
MANUFACTURER	ACER	EPSON	BENQ	OPTOMA	OPTOMA	SANYO	VIEWSONIC
Model	PH730	EMP-TW680	W500	HD73	EP727	PLC-XW55	PJ758
Rating	★★★	★★★★★	★★★★★	★★★★	★★★★★	★★★	★★★
SPECIFICATIONS							
Technology	0.65in DLP	0.7in LCD	0.55in LCD	0.65in DLP	0.55in DLP	0.6in LCD	0.63in LCD
Lamp life in hours (economy)	2,000 hours (4,000 hours)	1,700 hours (3,000 hours)	2,000 hours (3,000 hours)	2,000 hours (3,000 hours)	2,000 hours (3,000 hours)	1,500 hours (3,000 hours)	2,000 hours (3,000 hours)
Brightness (ANSI lumens)	1,200	1,600	1,100	1,100	2,200	2,000	2,200
Contrast ratio	2,500:1	10,000:1	5,000:1	6,000:1	2,200:1	400:1	500:1
PICTURE							
Native resolution	1,280x768	1,280x720	1,280x720	1,280x768	1,024x768	1,024x768	1,024x768
Native aspect ratio	5:3	16:9	16:9	5:3	4:3	4:3	4:3
Other aspect ratios	4:3, 1:1	4:3	4:3	16:9, 4:3	16:9, 5:4, 1.78:1	16:9, 1:1	16:9
Max diagonal at 213cm (7ft)	58in	60in	65in	61in	104in	60in	70in
Throw ratio	1.55 to 1.70:1	1.4 to 2:1	1.49 to 1.79:1	1.6 to 1.9:1	1.95 to 2.15:1	1.65:1 (fixed)	1.5:1 to 1.7:1
Projection distance	1.2m to 10.38m	0.8m to 13.6m	1.5m to 9m	1.5 to 12.2m	1.2m to 12m	1.31m to 9.9m	0.9m to 10.8m
Mirrors/invert	Yes/yes	Yes/yes	Yes/yes	Yes/yes	Yes/yes	Yes/yes	Yes/yes
HD TV compatible	Yes	Yes	Yes	Yes	No	No	No
Special view modes	Bright, PC, video, theatre, sRGB, user	Dynamic, living room, natural, theatre, black 1, theatre black 2, sRGB	Dynamic, cinema, standard, photo, user 1, user 2, user3	Cinema, bright, TV, photo, user	Presentation, bright, movies, RGB, user	Dynamic, standard, real, blackboard (green), user 1, user 2, user 3, user 4	Normal, cinema, dynamic, board (black, green, white), daylight
INPUTS/OUTPUTS							
VGA/DVI	Yes/yes	Yes/no	Yes/no	No/yes	Yes/yes	Yes/no	Yes/no
Max compressed resolution	1,600x1,200	1,360x768	1,920x1,080	1,600x1,200	1,600x1,200	1,600x1,200	1,600x1,200
Audio inputs	3.5mm	None	None	None	3.5mm	3.5mm, phono	3.5mm, phono
Composite/S-video/HDMI	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	No/yes/no	Yes/no/no	Yes/yes/yes
Component video	Yes	Yes	Yes	Yes	No	Via VGA	Yes
PAL/SECAM/NTSC	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes
Audio output	No	No	No	No	No	3.5mm	3.5mm
Video output	VGA	No	No	No	VGA	VGA	VGA
Other inputs/outputs	USB pointer control	D4 (SCART)	2nd component input, USB	None	USB pointer control	None	2nd VGA in, USB pointer control
OTHER							
Noise in normal use	28dB(A)	26dB(A)	28dB(A)	27dB(A)	30dB(A)	30dB(A)	34dB(A)
Dimensions (HxWxD)	119x350x382mm	124x406x309mm	120x349x277mm	95x347x246mm	71.5x259x188mm	78x330x236mm	100x340x270mm
Weight	3.5kg	5.2kg	3.9kg	3.1kg	2.0kg	2.8kg	3.5kg
Internal speaker (power)	Yes (3W stereo)	No	No	No	Yes (1W mono)	Yes (1W mono)	Yes (6W mono)
Accessories	Remote, cables (power, VGA, composite, USB, S-video, audio, RCA), carry case	Remote, cables (power, SCART)	Remote, cables (power, component)	Remote, cables (power, S-video, composite, component, R232)	Remote, cables (power, VGA, USB)	Remote, cables (power, VGA)	Remote, cables (power, VGA, composite), carry case
Remote special features	Digital zoom, mouse control buttons	Gamma, skin tone	Three programmable buttons	Digital zoom	Digital zoom, mouse control buttons	Digital zoom	Magnify, two programmable buttons
Lamp	230W	170W	140W	220W	180W	200W	220W
Cost inc VAT	£244	£184	£163	£212	£123	£243	£147
Supplier	www.lambda-tek.com	www.gryphonit.com	www.filion.com	www.filion.com	www.247av.com	www.zomp.net	www.justlamps.net
Cost per hour of use (economy)	£0.12 (£0.06)	£0.11 (£0.06)	£0.08 (£0.05)	£0.10 (£0.07)	£0.06 (£0.04)	£0.16 (£0.08)	£0.07 (£0.05)
BUYING INFORMATION							
Price inc VAT	£632	£664	£688	£990	£458	£465	£466
Supplier	www.technoworld.com	www.misco.co.uk	www.ebuyer.com	www.digitaldirect.co.uk	www.dabs.com	www.lambda-tek.com	www.morecomputers.co.uk
Details	www.acer.co.uk	www.epson.co.uk	www.benq.co.uk	www.optoma.co.uk	www.optoma.co.uk	www.sanyo.co.uk	www.viewsonic.co.uk
Warranty	Two years return to base (lamp 90 days)	Three years onsite (lamp three years)	One year swapout, two years return to base (lamp 90 days)	Three years swapout (lamp 90 days)	Three years swapout (lamp 90 days)	Three years swapout (lamp 90 days)	Three years swapout (lamp one year)
Part code	EJ3001.001	EMPTW680	9JJ2K77.B5E	HD73	EP727	PLX-XW55LMP	PJ758

MANUFACTURER	BENQ	MITSUBISHI ELECTRIC	PANASONIC	HITACHI	INFOCUS
Model	MP622c	XD510U	PT-LB5INTEA	CP-X205	IN36
Rating	★★	★★★	★★	★★★★	★★
SPECIFICATIONS					
Technology	0.55in DLP	0.55in DLP	0.6in LCD	0.63in LCD	0.7in DLP
Lamp life in hours (economy)	2,000 hours (4,000 hours)	2,000 hours (4,000 hours)	3,000 hours (N/A)	2,000 hours (2,000 hours)	2,000 hours (N/A)
Brightness (ANSI lumens)	2,200	2,600	2,000	2,200	3,000
Contrast ratio	2,000:1	2,000:1	400:1	500:1	1,000:1
PICTURE					
Native resolution	1,024x768	1,024x768	1,024x768	1,024x768	1,024x768
Native aspect ratio	4:3	4:3	4:3	4:3	4:3
Other aspect ratios	16:9	16:9, 5:4	16:9	16:9	16:9, 5:4
Max diagonal at 213cm (7ft)	60in	60in	70in	70in	60in
Throw ratio	0.86 to 0.94:1	1.62 to 1.9:1	1.45 to 1.70:1	1.5 to 1.7:1	1.83 to 2.27:1
Projection distance	1.7m to 12.2m	1.3m to 10m	1.1m to 11.1m	0.9m to 11.7m	1.49m to 10m
Mirrors/invert	Yes/yes	Yes/yes	Yes/yes	Yes/yes	Yes/yes
HD TV compatible	No	No	No	No	No
Special view modes	Dynamic, presentation, sRGB, cinema, user 1, user 2	Auto, presentation, standard, theatre, user	Natural, dynamic, standard, blackboard	Normal, cinema, dynamic, board (black, green, white), daytime	Presentation, film, video, user 1, user 2, user 3
INPUTS/OUTPUTS					
VGA/DVI	Yes/no	Yes/no	Yes/no	Yes/no	Yes/no
Max compressed resolution	1,280x1,024	1,280x1,024	1,920x1,080	1,600x1,200	1,400x1,050
Audio inputs	3.5mm	3.5mm, phono	3.5mm, phono	3.5mm, phono	3.5mm
Composite/S-video/HDMI	Yes/yes/no	Yes/yes/no	Yes/yes/no	Yes/yes/no	Yes/yes/no
Component video	Via VGA	Via VGA	No	Yes	No
PAL/SECAM/NTSC	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes	Yes/yes/yes
Audio output	No	3.5mm	3.5mm	3.5mm	3.5mm
Video output	VGA	VGA	VGA	VGA	VGA
Other inputs/outputs	None	2nd VGA in, USB pointer control	Wireless (802.11b/g)	2nd VGA in, USB pointer control, LAN	M1-D/A
OTHER					
Noise in normal use	31dB(A)	30dB(A)	39dB(A)	29dB(A)	35dB(A)
Dimensions (HxWxD)	106x239x251mm	102x332x250mm	57x297x210mm	117x340x270mm	74x264x218
Weight	2.5kg	2.9kg	1.9kg	3.3kg	2.3kg
Internal speaker (power)	Yes (2W mono)	Yes (2W mono)	Yes (1W mono)	Yes (7W mono)	Yes (3W mono)
Accessories	Remote, cables (power, VGA), carry case	Remote, cables (power, VGA, composite), carry case	Remote, cables (power, VGA), carry case	Remote, cables (power, VGA, composite), carry case	Remote, cables (power, VGA), carry case
Remote special features	Digital zoom	Magnify, AV mute	Digital zoom, wireless	Magnify, two programmable buttons	None
Lamp	200W	230W	165W	220W	200W
Cost inc VAT	£204	£227	£260	£217	£194
Supplier	www.zomp.net	Mitsubishi 01707278684	www.filion.com	www.zomp.net	www.relamping.co.uk
Cost per hour of use (economy)	£0.10 (£0.05)	£0.11 (£0.06)	£0.09 (N/A)	£0.11 (£0.07)	£0.10 (N/A)
BUYING INFORMATION					
Price inc VAT	£508	£644	£658	£706	£744
Supplier	www.lambda-tek.com	www.247av.com	www.zomp.net	www.247av.com	www.lambda-tek.com
Details	www.benq.co.uk	http://vis.mitsubishielectric.co.uk	www.panasonic.co.uk	www.hitachi.co.uk	www.infocus.com
Warranty	Three years onsite (lamp three years)	Three years swapout (lamp 90 days)	Three year swapout (lamp 90 days)	Three years replace and return (lamp 90 days)	Three years swapout (lamp 90 days)
Part code	9J06277.B9E	XD510U	PTLB5INTEA	CPX205	IN36-RE

Labs verdict Projectors

Our clear winner in the office projector category is Optoma's EP727. As well as being the cheapest projector in this group, it produced an excellent picture no matter which source was used. Its specification makes it ideal for business use and, with an HDCP-compatible DVI port and support for 1080i and 720p footage, it is also a good choice for watching movies. The EP727 wins a Best Buy award.

Competition in the home cinema category was tougher, as most projectors gave impressive image quality. Epson and BenQ's projectors were that bit better, though, and combine great performance with excellent features at a low price. Both use LCDs, so you don't get the rainbow effect, and a dynamic iris improves the contrast ratio. BenQ's W500 just edged in front, with the best standard-definition video we've seen on a projector. It wins a Best Buy award.

HOME CINEMA PROJECTORS



BENQ
W500

★★★★★



OFFICE PROJECTORS



OPTOMA
EP727

★★★★★

